

## LA-UR-21-23923

Approved for public release; distribution is unlimited.

Title: Case Study 4 - Rocky Flats Plant Fires (1957 and 1969)

Author(s): Schreiber, Stephen Bruce  
Clark, David Lewis

Intended for: NEST NFFW 1110 course (Spring 2021 Semester)

Issued: 2021-04-22

---

**Disclaimer:**

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

# Case Study 4 - Rocky Flats Plant Fires (1957 and 1969)

Steve Schreiber/David Clark

Actinide Operations/National Security Education Center

LA-UR-21-XXXXX

# Agenda

1. Background
2. Simply Difficult Videos – “RFP 1957” and “RFP 1969”
  - What is accurate?
  - What is missing?
3. References
  - “A September 11<sup>th</sup> Catastrophe You’ve Probably Never Heard About” – The Atlantic (2012)
  - “The day they almost lost Denver” - BotAS (1999)
4. What changed as a result?
  - At the Rocky Flats Plant
  - At Los Alamos

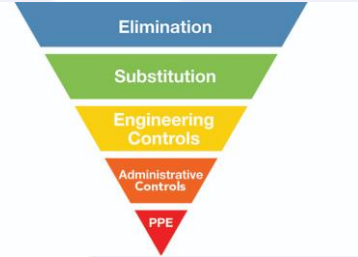


# What changed as a result of this event?



# Facility designed for plutonium metal fire safety

- Atomic Energy Commission/Department of Energy response to the 1969 fire was to design, fund and construct
  - Building 371 at Rocky Flats for pit production
  - TA-55 Plutonium Facility complex for research and development at Los Alamos Scientific Laboratory which was commissioned in 1978
- The latter has been described as “a monument to fire safety”



# TA-21 DP contrasted with TA-55 PF-4



## TA-21 DP contrasted with TA-55 PF-4





# TA-21 DP contrasted with TA-55 PF-4



## TA-21 DP contrasted with TA-55 PF-4





## TA-21 DP contrasted with TA-55 PF-4



## TA-21 DP contrasted with TA-55 PF-4





## TA-21 DP contrasted with TA-55 PF-4





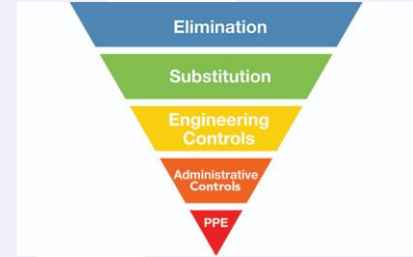
## TA-21 DP contrasted with TA-55 PF-4





# Facility designed for plutonium metal fire safety

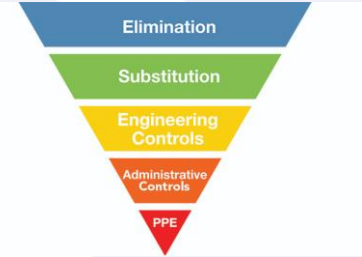
- Reinforced concrete structure designed with many small compartments to segregate laboratories and processing areas
- Fire wall between essentially two separate buildings, 100 and 300 Areas
- Gloveboxes constructed of noncombustible materials, fitted with thermal sensors, automated firedoors on the air supply ducts (trolley tunnels) to limit air flow, and local fire alarm buttons
- Fire detection system with 650 detection points (smoke and heat detectors)





# Facility designed for plutonium metal fire safety

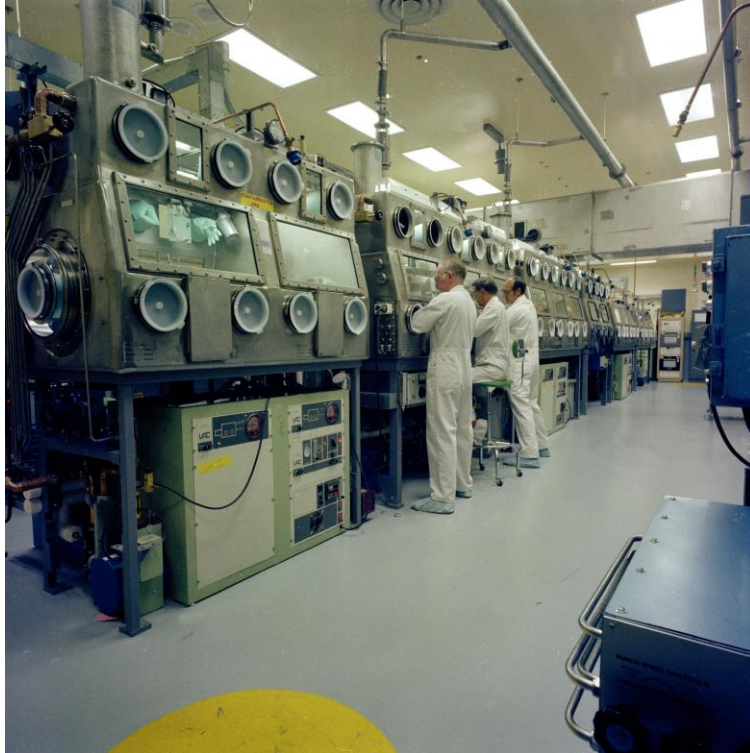
- Fire suppression system with sprinklers fed by two 150,000-gallon water tanks securing the filter plenums
- No collection points for water on the process floor, dished with respect to the safe haven of the hallways
- No processing or storage of Pu in trolleyways, dropboxes or plenums
- Continuous 24-hour/day monitoring from the Operations Center



# TA-55 PF-4 Operations Center

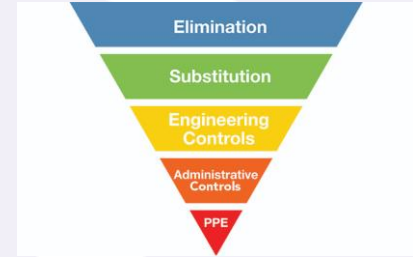


# TA-55 PF-4



# Process hazards

- Today's challenge is not to ignore the mundane or common hazards and focus only on the extreme, exotic and unlikely hazards
- Fire safety (mundane) or chemical exposure (common) vs. criticality safety (exotic) or radiation release (detectable)



# Questions?

